WATERS OF THE U.S. EVALUATION
ROSEMONT F BLOCK PARCEL

Prepared for: Hudbay Minerals

Prepared by: WestLand Resources, Inc.

Date: July 28, 2021

Project No.: 1049.151

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FIGURES

(follow text)

ATTACHMENT

1. INTRODUCTION

Rosemont Copper Company (Rosemont) engaged WestLand Resources, Inc. (WestLand), to evaluate ephemeral surface water features (washes) within a 200-foot (ft) wide corridor along the northern and western edges of a parcel of Rosemont-owned land referred to herein as F Block (Analysis Area; **Figure 1**). The features were evaluated for their potential to be considered waters of the U.S. (WOTUS) under the guidance in place prior to the promulgation of the Navigable Waters Protection Rule (NWPR) in June 2020, that guidance being the December 2008 U.S. Army Corps of Engineers (Corps)/U.S. Environmental Protection Agency (EPA) guidance entitled *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in* Rapanos v. United States and Carabell v. United States (the Guidance).

In 2014, WestLand delineated potential WOTUS within the entirety of F Block to support a Preliminary Jurisdictional Determination (PJD) that was submitted to the Corps for review and concurrence. In that PJD, WestLand mapped all features within F Block that exhibited an ordinary high water mark (OHWM), as that term is applied to ephemeral systems by Corps practices[1].

WestLand used the results of that 2014 mapping exercise to inform the assessment completed for this memorandum. As part of the May 2021 field assessment, WestLand staff field-checked the onsite surface water features for changes since the 2014 mapping, collected ground photos at each wash, and measured the width between OHWM of each feature within the 200-ft corridor. All mapped features in this evaluation were also mapped as part of the 2014 PJD effort, including several with poorly developed OHWM.

2. EVALUATION

2.1. SURFACE WATER FEATURES

Thirty-one surface water features (Features 1-31; **Figure 2**) occur within the 200-ft corridor and discharge from the parcel. Note that feature labels used in the 2014 PJD were revised for this evaluation. Photos of the features with widths of the channels are included in **Attachment A**. All surface water features within the Analysis Area are ephemeral and continue to support an OHWM.

2.2. SIGNIFICANT NEXUS EVALUATION

The Analysis Area surface water features occupy a similar place on the landscape as the ephemeral surface water features evaluated and approved by the Corps in the September 2019 *Jurisdictional Waters Determination for the Rosemont Copper Project Utility Corridor and West Side Operations, Pima County, Arizona.*

[1] Rosemont disagrees with the Corps position and asserts that OHWM is a term developed to identify the boundary of perennial watercourses and does not exist in ephemeral systems because there is insufficient flow to create one.

In that Approved Jurisdictional Determination (AJD), the Corps determined that none of the evaluated ephemeral surface water features were WOTUS. Although that determination was based on the ephemeral waters exclusion in the NWPR, a robust evaluation, per the Guidance, was provided in the AJD request demonstrating the lack of significant nexus between the subject surface water features and the nearest downgradient traditionally navigable water (TNW). Based on that demonstration, the ephemeral washes in the 2019 AJD for the Rosemont utility line would not have been considered WOTUS under the Guidance. That significant nexus analysis (SNA) is revisited here for the subject drainages.

2.2.1. Nearest Navigable-In-Fact Waterway

For the purpose of determining whether any of the surface water features within the Analysis Area are WOTUS, it was initially determined the location of the nearest navigable-in-fact waterway to which these surface water features may be tributary. A "navigable-in-fact" waterway is considered to be a waterway (river, stream, lake or reservoir) that is "used, or [is] susceptible of being used, in [its] ordinary condition, as highways for commerce, over which trade and travel are or may be conducted in the customary modes of trade and travel on water" (*The Daniel Ball*, 77 U.S. 557, 563 [1870]). This test for determining navigability for Commerce Clause and related regulatory purposes has been used on many occasions by the United States Supreme Court, most recently in *PPL Montana v. Montana*, 132 S. Ct. 1215 (2012).

When not considering intervening impediments to flow, all delineated surface water features within the Analysis Area may be considered ultimately tributary to the Colorado River, which is the nearest downgradient navigable-in-fact waterway to the Analysis Area, approximately 353 river miles from the Analysis Area, depending on the relevant reach traced from the Analysis Area. **Figure 3** provides an overview of the intervening landscape between the Analysis Area and the Colorado River.

Although the Colorado River is the nearest navigable-in-fact waterway to the Analysis Area, the Corps has previously identified two intervening reaches as TNW: "Study Reach B" of the Santa Cruz River near Tucson, and the Gila River from Powers Butte to Gillespie Dam, west of Phoenix.

Study Reach B begins as effluent discharge from Pima County's Agua Nueva (formerly Roger Road) wastewater treatment plant in Tucson, Arizona, and ends at the Pima County-Pinal County border in Arizona, a distance of approximately 32 river miles. The base effluent surface flows were determined to be completely lost through infiltration, evaporation, and evapotranspiration before the Pinal County line. The flow path from the Analysis Area joins Study Reach B approximately 36.3 river miles from the Analysis Area.

From the 1800s to present day, the Santa Cruz River has been a discontinuous stream, normally flowing only in response to significant precipitation and discharges of sewage effluent. Additionally, there are no reports of any successful commercial navigation over any significant portion of the river, and there is no evidence that the river has ever been used for water-borne trade or commerce. Study Reach B specifically was historically ephemeral or, at best, intermittent. At present, this reach has no natural flow for most of the year. Base flows in Study Reach B consist of sewage effluent discharged by two Tucson metropolitan area wastewater treatment facilities, which are located near the Santa Cruz River at Roger Road and Ina Road. The ordinary flow of water in Study Reach B is insufficient for the Santa Cruz River to be used as a highway for commerce, over which trade and travel are or may be conducted in the customary modes of trade and travel on water, and there is no evidence that this reach of the river has ever been used, or is susceptible to being used, for water-borne trade or commerce. Consequently, there is not sufficient support for treating Study Reach B as navigable-in-fact under the traditional test for navigability.

The second previously Corps-determined TNW is the 6.9-mile reach of the Gila River between Powers Butte and Gillespie Dam, located west of Phoenix near Arlington, Arizona. Base flows in this reach are the result of irrigation return flows and runoff from agricultural activities. The intervening distance between the Analysis Area and the Gila River at Powers Butte is approximately 187.9 river miles. There are no reports of any successful commercial navigation within this reach of the Gila River, and there is no evidence that this reach of the river has ever been used, or is susceptible to being used, for water-borne trade or commerce. Consequently, there is not sufficient support for treating this reach of the Gila River as navigable-in-fact under the traditional test for navigability.

In a recent lawsuit challenging the designation of Study Reaches A[2] and B of the Santa Cruz River as TNWs, the Corps and the EPA indicated to the federal court that the TNW designations do not determine any legal rights or obligations and that no legal consequences flow from the designation. The court accepted the agencies' characterization of the effect of the TNW designations and explained that the designation was merely advisory and was not legally binding (*National Association of Home Builders v. United States Environmental Protection Agency*, 956 F. Supp. 2d 198 [D.D.C. 2013], *aff'd on other grounds*, 786 F.3d 34 [D.C. Cir. 2015]).

Consequently, for the purpose of determining whether any surface water features within the Analysis Area are WOTUS, the Colorado River is regarded as the nearest navigable-in-fact waterway. For the sake of completeness, additional analyses considering Study Reach B of the Santa Cruz River and the Gila River at Powers Butte as TNW are provided as well, recognizing, again, that these designations are advisory in nature and are not binding on Rosemont.

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[2] Study Reach A is a second effluent-reliant reach of the Santa Cruz River that the Corps determined a TNW at the same time as Study Reach B. Study Reach A is upstream from Study Reach B and does not affect the Rosemont analysis.

2.2.2. Other Significant Nexus Determinations

The Corps has signed numerous other AJDs in Arizona under the Guidance, utilizing SNA. In many of these cases, the Corps has determined that the evaluated non-relatively permanent waters (RPW) tributaries lacked a significant nexus with a downgradient TNW and were not WOTUS. Although the details of each SNA varied among projects, a persistent theme in the analyses is that the further removed a given non-RPW relevant reach is from the TNW, and the smaller its watershed in comparison to that of the TNW, the less likely the Corps was to assert jurisdiction.

A review of selected significant nexus jurisdictional determinations (JDs) informs the current analysis. The Corps completed two previous significant nexus JDs identifying Study Reach B of the Santa Cruz River as the nearest TNW: the ASARCO Mission Mine (Corps File No. SPL-2015-00520-MWL; hereafter Mission), and portions of the Sierrita Open Pit Copper Mine (Corps File No. SPL-2011-00160-MWL; hereafter Sierrita). The approved JDs for Mission and Sierrita both had findings of "no significant nexus" between the evaluated ephemeral drainage features and Study Reach B of the Santa Cruz River[3]. The Corps' determinations that the drainages analyzed within the Mission and Sierrita JDs had no significant nexus with Study Reach B of the Santa Cruz River was based at least partially upon the distance to Study Reach B (25 to greater than 30 river miles) and the intervening deep, sandy, alluvial bed with limited stands of xeroriparian vegetation along the Santa Cruz River.

Relative to the Mission and Sierrita JDs, the surface water features within the Analysis Area are of similar to greater distance from Study Reach B of the Santa Cruz River and share the same flow path almost entirely, including the same intervening deep, sandy, alluvial bed in the Santa Cruz River.

Downstream from the confluence of the Analysis Area flow path with the Santa Cruz River, the potential flow path to the Gila and Colorado rivers shares many segments and characteristics with three previously completed JDs in which the Corps determined no WOTUS were present: 1) Sendero Pass (Corps File No. SPL-2006-01833-MB; hereafter Sendero), 2) the Silver Bell Mine No. 1 Leach Dump and West Oxide Pit Expansion Areas (Corps File No. SPL-2010-00102-MB), and 3) another Silver Bell Mine Expansion (Corps File No. SPL-2010-00102-MB; the two Silver Bell Mine AJDs hereafter referred together as Silver Bell). The approved Sendero and Silver Bell JDs were evaluated with the Gila River between Powers Butte and Gillespie Dam as the nearest TNW, and both indicated findings of "no significant nexus" between the evaluated ephemeral drainage features and the Gila River TNW. The Colorado River is approximately 118 river miles farther downstream from this reach of the Gila River.

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[3] As explained in **Section 2.2.1**, there is no evidence that Study Reach B qualifies as a navigable-in-fact waterway under the traditional test for navigability, and, in any case, the Corps and EPA have stated that this TNW designation is merely advisory and has no legal effect. However, in these prior JDs, it was considered a TNW for the significant nexus test.

The Sendero and Silver Bell JDs included an evaluation of a portion of the downgradient flow path shared by the Analysis Area, namely Greene Canal to Greene Wash, Santa Rosa Wash, Santa Cruz Wash, and finally the Gila River (see **Figure 3**). The Corps determinations that the drainages analyzed within the Sendero and Silver Bell JDs had no significant nexus with the TNW reach of the Gila River were based at least partially upon the great distance (118 to 152 river miles) to the TNW reach of the Gila River and the presence of multiple constructed impediments (berms, structures, and agricultural fields) along this potential downgradient flow route, especially between Greene Wash and Santa Cruz Wash (see **Figure 3**).

Relative to the Sendero and Silver Bell JDs, the surface water features within the current Analysis Area lie approximately 36 and 70 river miles or farther upstream from the TNW reach of the Gila River (and from the Colorado River), and share essentially the same downgradient flow path (Santa Cruz River to Study Reach B, Greene Canal, Greene Wash, Santa Rosa Wash, Santa Cruz Wash, and the Gila River).

2.2.3. Analysis Area Surface Water Features

As noted in **Section 2.1**, all surface water features within the Analysis Area are ephemeral drainages, flowing only briefly in direct response to storm events. No TNW, RPW, or wetland features were identified within the Analysis Area.

Hydrologic Factors

The Analysis Area occurs on the western slopes of the northern Santa Rita Mountains, with stormwater flow generally northwest toward the Santa Cruz River. The path from the slopes of the Santa Rita Mountains to the Santa Cruz River includes crossing more than 10 miles of deep alluvial deposits with lessening slope grade as distance from the mountain slopes increases. Typical of hydrology on these landscapes, multiple channels descend from the mountain slopes and run generally parallel to each other towards the Santa Cruz River, forming a depositional landform composed of a series of coalescing alluvial fans (bajada). Runoff and sediment in large channels near the base of the mountains spreads out into numerous shallow channels on the lower gradient alluvium, tending to divide even more the further downstream and the lower the slope gradient over which the flow travels. Flows transfer between these adjacent features via a network of break-out channels.

The drainages within the Analysis Area lie approximately 36 river miles from Study Reach B of the Santa Cruz River, 188 river miles from the Gila River at Powers Butte, and 353 river miles from the Colorado River at the Gila River confluence, depending on the relevant reach traced from the Analysis Area (see **Figure 3**). Virtually all intervening surface water features along this flow path are ephemeral.

The largest watershed associated with an Analysis Area relevant reach is approximately 12.6 square miles measured at the downstream end of the relevant reach. This watershed accounts for approximately 0.36 percent of the total watershed reporting to Santa Cruz River Study Reach B, which is 3,503 square miles as measured at the Cortaro U.S. Geological Survey stream gage (09486520). This watershed represents 0.03 percent of the Gila River TNW watershed (49,650 sq mi, measured at the Gillespie Dam), and 0.01 percent of the Colorado River TNW (242,900 sq mi, measured at Yuma stream gage (09521000) near the confluence of the Gila River).

Research on ephemeral stream systems in the arid Southwest have been conducted in climatic conditions similar to those of the Analysis Area (Cataldo et al. 2010), specifically at the Walnut Gulch Experimental Watershed (WGEW) approximately 40 miles east of the Analysis Area. This research investigated the roles that soil porosity, evapotranspiration, and other factors play in surface water transmission losses. After comparing multiple studies, Cataldo et al. (2010) found that transmission loss over distance traveled is most strongly correlated with the inflow volume (determined by the size of the drainage's watershed) and the peak rate inflow. Of particular relevance to the Analysis Area, Cataldo et al. (2005) found that stormwater flows in a 57.1-square-mile watershed experienced a 95- to 98-transmission loss over a 7.8-mile length of the stream reach. The Analysis Area watershed is much smaller (12.6 square miles) and the distance to the nearest TNW much farther (approximately 36 to 353 miles) than Cataldo's study watershed, but the climate and setting are similar to the WGEW. It seems very likely that Analysis Area surface water flows, as in the Cataldo studies, would be entirely lost before reaching Study Reach B of the Santa Cruz River, let alone the Gila or Colorado rivers.

In addition to expected loss of surface flows discussed in **Section 2.2.1**, other impediments to downstream flow to the nearest TNW have already been discussed. These impediments include retention basins along some channels between the Analysis Area and the Santa Cruz River, the Santa Cruz Flats broad plain of indistinct, non-continuous channels; multiple constructed berms, structures, and agricultural fields between the Santa Cruz Flats and the Gila River; and the Painted Rock Reservoir dam.

The sheer distance from the Analysis Area to the Gila and Colorado rivers, combined with the ephemeral nature of most of the route, indicates that the hydrologic connectivity between the onsite drainages in the Analysis Area and the Gila and Colorado rivers is, at best, negligible.

Ecological Factors

Within the Analysis Area, potential pollutant sources primarily include unpaved roads, other minor surface disturbances, and calcium carbonate deposits from the upstream marble quarry. The most significant potential pollutant from this area, therefore, is expected to be unconsolidated sediment from existing disturbance. Any natural desert area also contributes significant sediment loads to ephemeral drainages.

A portion of Study Reach B, downgradient of the confluence with Rillito Creek, has been designated as "impaired" by the Arizona Department of Environmental Quality (ADEQ). However, the impairment of this reach is a result of exceedances for ammonia and *E. coli*, not for sediment or any other analytes that may be anticipated to occur in stormwater flows within the Analysis Area. So, while the chemical integrity of Study Reach B is compromised, that condition has not resulted from flows within the Analysis Area drainages.

With regard to potential biological nexus factors, the Analysis Area drainages are all ephemeral and do not support aquatic species. As such, these features do not "provide aquatic habitat that supports biota of" Study Reach B of the Santa Cruz River. Although the xeroriparian habitat of the Analysis Area drainages supports terrestrial species known to favor xeroriparian habitats, the only species with Endangered Species Act protections that is known to occur within the Analysis Area, the Pima pineapple cactus, is considered an upland species and no proposed or designated critical habitat occurs in the Analysis Area or along Study Reach B. As such, there is no demonstrable biological nexus between the Analysis Area drainages and the Santa Cruz River that is more than speculative or insubstantial.

Considering that the distance from the Analysis Area to the Gila River at Powers Butte is approximately four to five times the distance as to Study Reach B of the Santa Cruz River, and that multiple additional constructed impediments to flow exist between Study Reach B and the Gila River, the potential for the drainages within the Analysis Area to have a more than an insubstantial or speculative effect on the ecology of the effluent-dominated flows of this reach of the Gila River is even more remote than the potential to affect Study Reach B. The effect on the Colorado River would likely be non-existent.

2.2.4. Significant Nexus Determination

Within the Analysis Area, the dominant surface water feature is an unnamed ephemeral wash with a watershed of approximately 12.6 square miles. The nearest downstream Corps-designated TNW to the Analysis Area is Study Reach B of the Santa Cruz River, an effluent-dependent reach that in the absence of effluent would likewise be ephemeral. Study Reach B is approximately 36 miles downstream of the Analysis Area's ephemeral washes. Based on hydrologic studies completed at the WGEW, one may readily infer that flows within the Analysis Area's ephemeral washes would be lost to infiltration well before reaching Study Reach B of the Santa Cruz River. In addition, there is no indication that sediment or other analytes that occur in the Analysis Area's drainages have any effect on the chemical integrity of Study Reach B, nor do these drainages have any meaningful biological or ecological relationship to the TNW given their small size, ephemeral condition, distance upstream, and other factors.

Based on the information provided above, none of the drainages within the Analysis Area possess a significant nexus with Study Reach B of the Santa Cruz River. As such, the Analysis Area drainages do not possess a significant nexus with the Gila River at Powers Butte and the Colorado River, which are 188 and 353 river miles, respectively, farther downstream.

The drainage features within the Analysis Area constitute non-navigable, non-RPW tributaries, which do not possess a significant nexus with a downgradient navigable-in-fact water.

3. CONCLUSION

All features within the Analysis Area are non-RPW tributaries. The nearest potential downstream TNW to the Analysis Area is Study Reach B of the Santa Cruz River, which is approximately 36 miles downstream from Analysis Area washes and dominated by effluent discharged from wastewater treatment plants.

Based on the analysis conducted, it is reasonable to conclude that the tributaries within the Analysis Area, which lack any adjacent wetlands, do not have an effect that is more than speculative or insubstantial on the chemical, physical, and biological integrity of the nearest downstream TNW. All of the surface water features considered in this analysis would therefore be non-jurisdictional.

4. REFERENCES CITED

Cataldo, Joseph, Christopher Behr, and Franco Montalto. 2005. An Analysis of Transmission Losses in Ephemeral Streams. Wetland Science Applications, Inc.

Cataldo, Joseph C., Christopher Behr, Franco A. Montalto, and Robert J. Pierce. 2010. "Prediction of Transmission Losses in Ephemeral Streams, Western U.S.A." *The Open Hydrology Journal* 4:19-34.

FIGURES

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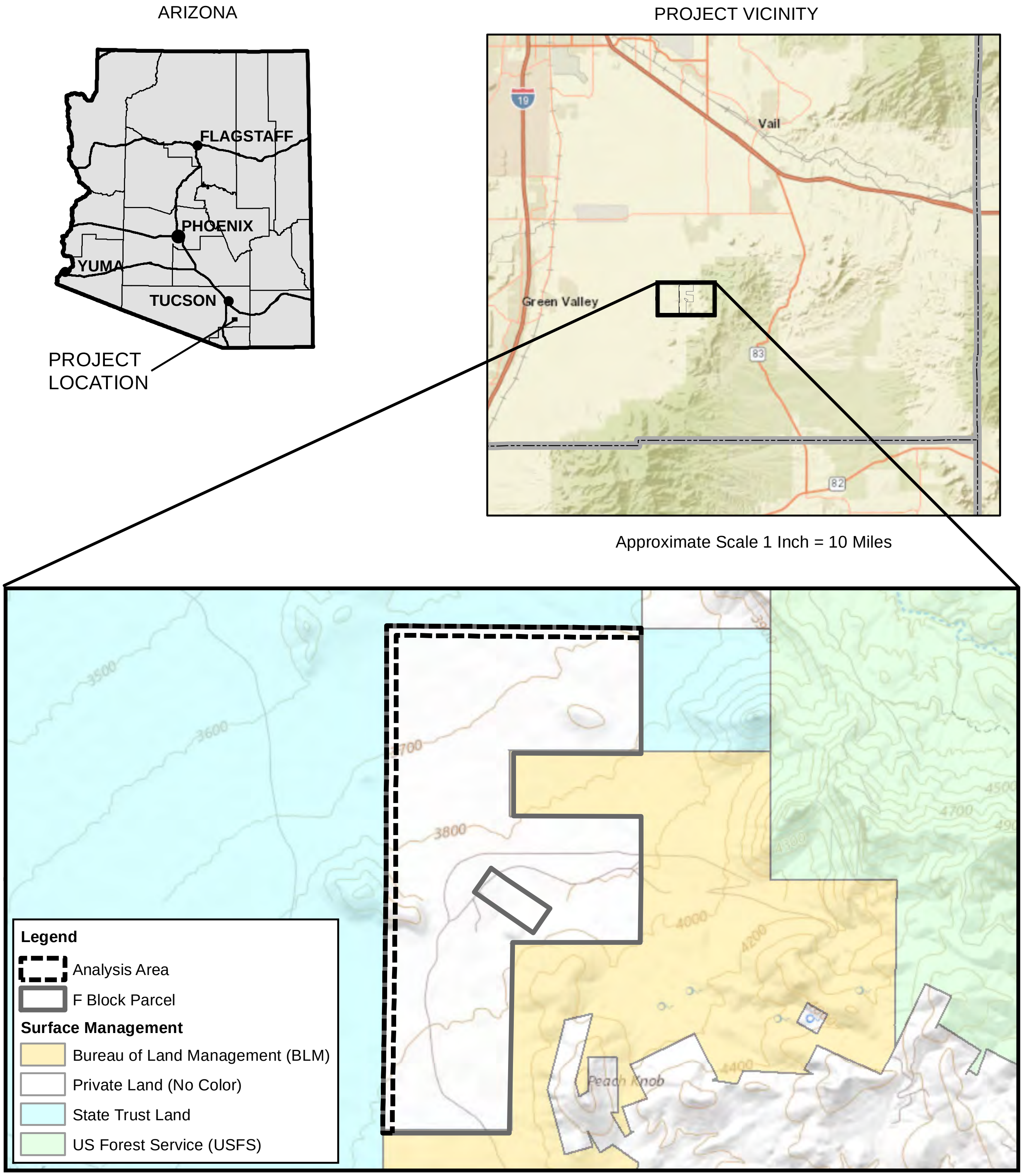


T18S, R15E, Portions of Sections 10 and 15,
Pima County, Arizona,
Data Source: Hudbay Minerals
Surface Management: BLM 2019, WRI modified 2019
Image Source: ArcGIS Online, World Street Map and
USGS National Topographic Map

HUDBAY MINERALS
F Block
Ordinary High Water Mark Assessment

VICINITY MAP
Figure 1

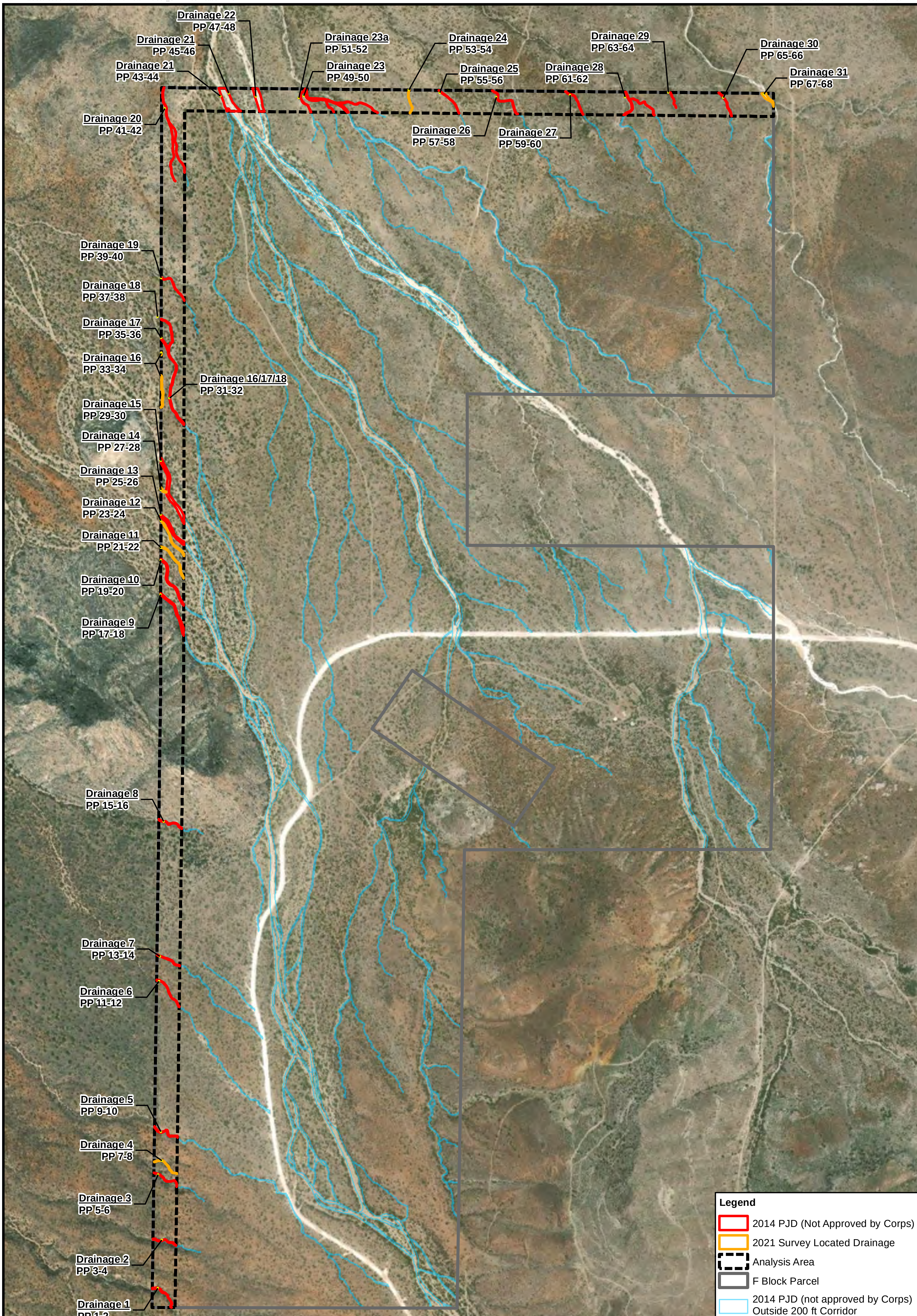
WestLand Resources

N

0 1,500 3,000 Feet

0 500 1,000 Meters

Path: M:\Jobs\1000's\1049.151\ENV\CWA\mxd\02 Fblock_OHWMdelineation.mxd Date: 7/2/2021 User: evinson



T18S, R15E, Portions of Sections 10 and 15,
Pima County, Arizona,
Data Source: Hudbay Minerals
Image Source: ArcGIS Online, World Imagery
05/11/2020-10/16/2020

WestLand Resources

N

0 400 800 Feet

0 125 250 Meters

HUDBAY MINERALS
F Block
Ordinary High Water Mark Assessment

F BLOCK PARCEL DELINEATION
Figure 2

RCC-CW009847

Path: M:\Jobs\1000's\1049.151\ENV\CWA\mxd\F Block\03 Fblock_RegionalOverview.mxd

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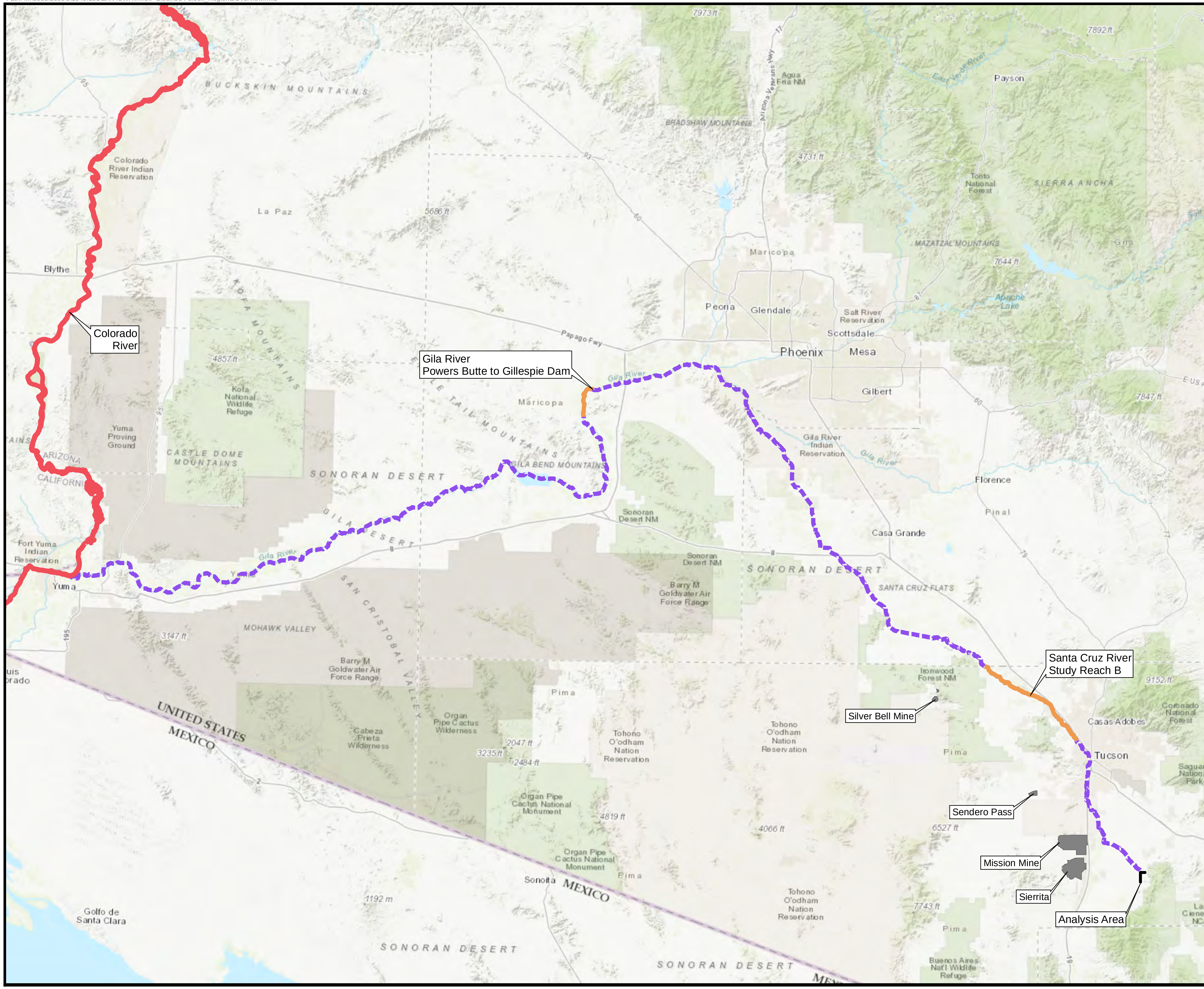

T18S, R15E, Portions of Sections 10 and 15,
Pima County, Arizona,
Data Source: Hudbay Minerals
Image Source: ArcGIS Online, World Topographic Map

Legend

- Downgradient Receiving Waters
- Navigable-In-Fact Waterway
- Potential Downgradient Flow Path
- Corps No Waters Determinations
- Analysis Area

N

0 10 20 Miles

0 20 40 Kilometers

WestLand Resources

HUDBAY MINERALS

F Block

Ordinary High Water Mark Assessment

REGIONAL OVERVIEW

Figure 3

ATTACHMENT A

Representative Photographs

Photo 1.
Feature: 1
OHWM: Yes
Width: 4 ft.
View: Upstream

Photo 2.
Feature: 1
OHWM: Yes
Width: 4 ft.
View: Downstream

Photo 3.
Feature: 2
OHWM: Yes
Width: 3 ft.
View: Upstream

WestLand Resources

Photo 4.
Feature: 2 - 19
OHWM: Yes
Width: 3 ft.
View: Downstream

Photo 5.
Feature: 3
OHWM: Yes
Width: 2 ft.
View: Upstream

Photo 6.
Feature: 3
OHWM: Yes
Width: 2 ft.
View: Downstream

Photo 7.
Feature: 4
OHWM: Yes
Width: 1.5 ft.
View: Upstream

Photo 8.
Feature: 4
OHWM: Yes
Width: 1.5 ft.
View: Downstream

Photo 9.
Feature: 5
OHWM: Yes
Width: 4 ft.
View: Upstream

Photo 10.
Feature: 5
OHWM: Yes
Width: 4 ft.
View: Downstream

Photo 11.
Feature: 6
OHWM: Yes
Width: 2 ft.
View: Upstream

Photo 12.
Feature: 6
OHWM: Yes
Width: 2 ft.
View: Downstream

Photo 13.
Feature: 7
OHWM: Yes
Width: 4 ft.
View: Upstream

Photo 14.
Feature: 7
OHWM: Yes
Width: 4 ft.
View: Downstream

Photo 15.
Feature: 8
OHWM: Yes
Width: 3 ft.
View: Upstream

Photo 16.
Feature: 8
OHWM: Yes
Width: 3 ft.
View: Downstream

Photo 17.
Feature: 9
OHWM: Yes
Width: 10 ft.
View: Upstream

Photo 18.
Feature: 9
OHWM: Yes
Width: 10 ft.
View: Downstream

Photo 19.
Feature: 10
OHWM: Yes
Width: 14 ft.
View: Upstream

Photo 20.
Feature: 10
OHWM: Yes
Width: 14 ft.
View: Downstream

Photo 21.
Feature: 11
OHWM: Yes
Width: 6 ft.
View: Upstream

Photo 22.
Feature: 11
OHWM: Yes
Width: 6 ft.
View: Downstream

Photo 23.
Feature: 12
OHWM: Yes
Width: 5 ft.
View: Upstream

Photo 24.
Feature: 12
OHWM: Yes
Width: 5 ft.
View: Downstream

Photo 25.
Feature: 13
OHWM: Yes
Width: 14 ft.
View: Upstream

Photo 26.
Feature: 13
OHWM: Yes
Width: 14 ft.
View: Downstream

Photo 27.
Feature: 14
OHWM: Yes
Width: 1 ft.
View: Upstream

Photo 28.
Feature: 14
OHWM: Yes
Width: 1 ft.
View: Downstream

Photo 29.
Feature: 15
OHWM: Yes
Width: 37 ft.
View: Upstream

Photo 30.
Feature: 15
OHWM: Yes
Width: 37 ft.
View: Downstream

Photo 31.
Feature: 16/17/18 before split
OHWM: Yes
Width: 2 ft.
View: Upstream

Photo 32.
Feature: 16/17/18 before split
OHWM: Yes
Width: 2 ft.
View: Downstream

Photo 33.
Feature: 16
OHWM: Yes
Width: 2 ft.
View: Upstream

Photo 34.
Feature: 16
OHWM: Yes
Width: 2 ft.
View: Downstream

Photo 35.
Feature: 17
OHWM: Yes
Width: 11 ft.
View: Upstream

Photo 36.
Feature: 17
OHWM: Yes
Width: 11 ft.
View: Downstream

Photo 37.
Feature: 18
OHWM: Yes
Width: 1 ft.
View: Upstream

Photo 38.
Feature: 18
OHWM: Yes
Width: 1 ft.
View: Downstream

Photo 39.
Feature: 19
OHWM: Yes
Width: 3 ft.
View: Upstream

Photo 40.
Feature: 19
OHWM: Yes
Width: 3 ft.
View: Downstream

Photo 41.
Feature: 20
OHWM: Yes
Width: 1 ft.
View: Upstream

Photo 42.
Feature: 20
OHWM: Yes
Width: 1 ft.
View: Downstream

Photo 43.
Feature: 21 west channel
OHWM: Yes
Width: 20 ft.
View: Upstream

Photo 44.
Feature: 21 west channel
OHWM: Yes
Width: 20 ft.
View: Downstream

Photo 45. new 55
Feature: 21 east channel
OHWM: Yes
Width: 35 ft.
View: Upstream

Photo 46.
Feature: 21 east channel
OHWM: Yes
Width: 35 ft.
View: Downstream

Photo 47.
View: Downstream
Feature: 22
OHWM: Yes
Width: 55 ft.
View: Upstream

Photo 48.
Feature: 22
OHWM: Yes
Width: 55 ft.
View: Downstream

Photo 49.
View: Upstream
Feature: 23
OHWM: Yes
Width: 10 ft.
View: Upstream

Photo 50.
Feature: 23
OHWM: Yes
Width: 10 ft.
View: Downstream

Photo 51.
Feature: 23a
OHWM: Yes
Width: 2 ft.
View: Upstream

Photo 52.
Feature: 23a
OHWM: Yes
Width: 2 ft.
View: Downstream

Photo 53.
Feature: 24
OHWM: Yes
Width: 1 ft.
View: Upstream

Photo 54.
Feature: 24
OHWM: Yes
Width: 1 ft.
View: Downstream

Photo 55.
Feature: 25
OHWM: Yes
Width: 1 ft.
View: Upstream

Photo 56.
Feature: 25
OHWM: Yes
Width: 1 ft.
View: Downstream

Photo 57.
Feature: 26
OHWM: Yes
Width: 4 ft.
View: Upstream

Photo 58.
Feature: 26
OHWM: Yes
Width: 4 ft.
View: Downstream

Photo 59.
Feature: 27
OHWM: Yes
Width: 2 ft.
View: Upstream

Photo 60.
Feature: 27
OHWM: Yes
Width: 2 ft.
View: Downstream

Photo 61.
Feature: 28
OHWM: Yes
Width: 3 ft.
View: Upstream

Photo 62.
Feature: 28
OHWM: Yes
Width: 3 ft.
View: Downstream

Photo 63.
Feature: 29
OHWM: Yes
Width: 2 ft.
View: Upstream

Photo 64.
Feature: 29
OHWM: Yes
Width: 2 ft.
View: Downstream

Photo 65.
Feature: 30
OHWM: Yes
Width: 2 ft.
View: Upstream

Photo 66.
Feature: 30
OHWM: Yes
Width: 2 ft.
View: Downstream

Photo 67.
Feature: 31
OHWM: Yes
Width: 25 ft.
View: Upstream

Photo 68.
Feature: 31
OHWM: Yes
Width: 25 ft.
View: Downstream